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capacity of electric power stations in the regained territories in 1938 was approximately 1,225,000 kilowatts, with production of 3,600,000,000 kilowatt-hours. In 1948 the total installed capacity of the electric power stations covering the present day area of Poland amounted to 2,800,000 kilowatts with production of 7,320,000,000 kilowatt-hours.

Inasmuch as power in the regained territories was partly supplied by electric power plants situated outside the present boundaries of Poland, consumption there was greater and probably amounted to about 8 billion kilowatt-hours. In the former territories the erection of high tension lines and the opening of regional electric power establishments, 17 electric power regions, was only begun before the war with insufficient time for adequate development of operations. Most of the electric power plants were of local character. Efforts to coordinate their operations, interests and acquired rights did not produce significant results. The electrification of villages was just in initial stages.

In the regained territories the villages were almost entirely electrified. Electric plants were united into an efficiently operating power system. However, war damage was greater here so that after World War II it was necessary to start almost from the beginning.

Already during the war the occupying forces were removing equipment and taking it out of Poland. The retreating German army destroyed a great number of installations. Actual war operations followed with further destruction and separation from the electric plants on the left bank of the Oder and in the Krolewiec region so that after the war the situation of the power industry was desperate. Conditions could not be stabilized since it was physically impossible to take a quick inventory throughout Poland because many properties were still inaccessible. As the situation came under control the power engineers in Poland repaired the plants and put them into operation. This was very often done before it was possible to take inventory.

At the end of 1945 there were 220 electric power stations with a capacity of 1,000 kilowatts or more with a total capacity as follows: theoretical capacity, 2,330,003 kilowatts; actual capacity, 1,961,019 kilowatts; and peak load, 974,963 kilowatts.

To avoid misunderstanding it should be mentioned that the above nomenclature, accepted by CZE (Centralny Zarzad Energetyki, Central Power Administration) is not exact. "Actual capacity" is not capacity which could actually be utilized at any moment. At the end of 1945 the power plants were operating without a reserve so that their attainable capacity was not much greater than the peak load or in the million kilowatt range. The remaining 960,000-kilowatt capacity could not be utilized for lack of an adequate quantity of subsidiary equipment, boilers, transformers, and cables or the necessary capital repairs.

In the fourth quarter of 1945 production of electric power in plants of 1,000 kilowatt or more was 1,256,353 kilowatt-hours representing 97 percent of the total production or 61 percent of prewar production calculated on an annual basis. Actual production for the year was smaller since both power plants and industry were just beginning operations in 1945.

At the end of 1945 Poland had not much more than 40 thousand kilometers of high tension lines, over 50 percent of which were either destroyed or severely damaged.

Organizationally, the area of the entire country was divided into 14 power regions under the direction of the Central Power Administration. Despite many faults, this division has been retained almost without change up to the present time, since changes require serious study and research.

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The administrative structure of the regional associations is not uniform. In the regained territories the associations are actually electric power establishments uniting under one administration all the power plants of the region. On the other hand, some of the associations of the former territories are nothing more than a superstructure added to the many former electric power enterprises retaining broad autonomy. The Central Power Administration is endeavoring to set up a uniform administrative organization in all the associations. This however, cannot be accomplished day by day without serious disturbances in operation and in the service to consumers.

According to CZE data, there were 232 electric power plants with capacity of 1,000 kilowatts or more, 97 percent of production, at the end of 1947 with totals as follows: theoretical capacity, 2,422,000 kilowatts; actual capacity, 2,284,000 kilowatts; and peak load, 1,370,000 kilowatts.

Production in 1946 amounted to 5,709,457 thousand kilowatt-hours; in 1947 it was 6,613,474 thousand kilowatt-hours. By adding 3 percent for production of plants with a power less than 1,000 kilowatts, production in 1947 amounted to about 6,850 million kilowatt-hours, or 93.5 percent of prewar production, calculated for all of Poland within its present boundaries. In the face of the extent of war damage this is a very favorable comparison.

Since Polish power plants operated in 1947 just as they did in 1945 almost with no reserves, their available capacity was not much greater than the peak load, that is, in the 1.5 million kilowatt range.

If we compare production with available capacity, we will find that in 1947 the number of hours of utilization at capacity amounted to almost 4,500 and the number of hours of utilization of the peak load was 4,800. These are exceedingly large amounts, proving that the workers in the power industry are not afraid of work under the most difficult conditions, can extricate themselves from all situations and do not spare their strength for the common good. The Polish power system has proved to be efficient. These figures, however, also show the unfavorable side of the power economy: namely, insufficient capacity; limitations and shifting in the utilization of electric power in order to reduce the peak; inconsiderate or ruthless use of machines which results in rapid deterioration; and, in general, the fact that the development of productive capacity of power is slower than national economy demands.

At the end of 1947 there were 43 thousand kilometers of high tension and 35 thousand kilometers of low tension electric networks. In 1948 production continued to increase. In the first half of 1948 public utility power plants of the CZE produced 1,979 million kilowatt-hours as compared with 1,727 million kilowatt-hours in the first half of 1947. This exceeds the estimated or planned production of 1,898 million kilowatt-hours by 5 percent and the production of the first half of 1947 by 15 percent.

In the 3 years since the liberation the power industry accomplished a great deal. Many plants were repaired and rebuilt in Warsaw, Pruszkow, Gdynia, and Elblag. A number of electric lines were rebuilt, the most important of these being Roznow-Warsaw, with 150 kilovolts. The most important of the new lines constructed is Slask-Lodz, with 220 kilovolts. The total of electric power stations rebuilt amounts to 200 thousand kilowatts and the total of repaired turbo sets is about 500 thousand kilowatts. All this is not sufficient to assure efficient service to consumers. Power shortage continues to be a serious problem and very difficult to solve.

Turbogenerators and certain other equipment are not of domestic manufacture and must be imported. Since all countries are affected by shortage of power, delivery periods are unusually long, not to mention difficulties in connection with foreign drafts, treaties, etc. In 1947 turbo sets were on order abroad of a productive capacity of 500 thousand kilowatts. In the current year, no doubt,

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the order will be equal to this. Taking into consideration the delayed deliveries, Polish power industry will be obliged to continue operating without reserves, subjecting consumers to troublesome limitations without assurance of uninterrupted service.

In the last years before World War II the annual increase in demand, also increase in production, of electric power in Poland was 11 percent. With the forced tempo of reconstruction of industry and economy at the present time the demand should be greater. In 1947 despite limitations it increased 16 percent over 1946. The economic reconstruction of the regained territories in particular can contribute to this increased demand. For instance, Szczecin Region which has 75 percent of the total of high-voltage lines at present time produces only 28 percent of the total electric power. It is feared that the retarded development of the power industry will tend to restrain the development in the other branches of the economy. These fears are not exaggerated if one considers that power installations are inadequate. Machines are, for the most part, obsolete and damaged by the occupation forces. In other words, it is necessary to build as soon as possible a large number of modern power plants, conveniently distributed and adequately connected with proper lines.

The nationalization of all the private electric power plants has created a real basis for solving the problem of electric power according to the plan.

An endeavor should be made to unite the entire country into one power system. All electric stations, excluding the obsolete, the very small and the uneconomical should operate within one common network throughout the country, supplying consumers at convenient points, in convenient amounts and according to uniform agreements. In the production and supply of electric power conditions are unlike any others, such as, the impossibility of building up a stock or separating consumption from production. These conditions make it imperative that the volume of production equal the demand at all times. In event of excessive demand, it is impossible to draw on a surplus supply as in other industries. The machines must cover the demand or a certain number of consumers must be cut off. Such action should not be necessary except in case of a serious power shortage.

Working out long-range plans for electrification is a difficult problem which requires much study and calculation and above all necessitates stabilizing the volume of power required in the various localities. Thus it is difficult to estimate the demand for power over a period of years, especially in the case of industry, the largest consumer. Consequently, a long-range plan for the electrification of Poland has not been definitely worked out so far.

Individual problems are being solved in a very haphazard manner. It is planned to build several powerful electric power stations and to expand several others. It is also planned to unite Warsaw with the Siask-Lodz line by a 220 kilovolt line and to unite a number of 110 kilovolt lines and others.

Because of the great power shortage in Poland there is no doubt that all of these power stations are needed and will be used. The necessity of erecting transmission lines is less certain. Should this fragmentary planning continue, there is no doubt that some of the installations now being erected will not fit later into the general long-range plan.

* As the third year of the Economic Reconstruction Plan approaches it becomes imperative that a general long-range plan for the electrification of Poland be drawn up.

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